Introduction

One of the implications of menopause is post-menopausal osteoporosis, the resultant of bone remodeling in the skeleton secondary to estrogen deficiency. Bone remodeling rates have been shown to double at menopause, triple 13 years later and remain elevated till osteoporosis, contributing to the age-related skeletal fragility in women. Osteoporosis affects approximately one in six women over the age of 50 in the west. It is characterized by reduction in the quantity of bone during aging process without changing its chemical composition. The loss of trabecular bone is 50% whereas loss of cortical bone is 5% and seen more rapidly during first 3-4 years after menopause.

Proportion of elderly in Pakistan is growing steadily and persons more than 65 years are estimated to be 4%. Over half of women over the age of 60 years live in the developing countries. Health care providers in developing countries often have limited information regarding physical, psychological and social problems of aging. These women do not understand their unique health risks. Moreover, their financial and physical limitations further reduce their access to medical services.

The average age at menopause in the developed nations is 51 years while the worldwide life expectancy of women has lengthened to approximately 62 years. According to local studies, the average age at menopause in Pakistan is estimated to be 47 years while female life expectancy is 64 years as compared to 70 years in other Asian countries. The rural study in Punjab province reported mean age at menopause 49±3.6 years; the median being 50 years. The majority of women (22.3%) reached menopause at 50 years followed by 13.9%, who became menopausal at 49 years.

Menopause is said to have occurred if menstruation has stopped for at least one year. The word ‘menopause’ refers to the last menstrual bleed and the diagnosis is retrospective. It is generally considered to have occurred retrospectively after one year of amenorrhea.

Abstract

Objective: To assess the association of osteopenia and osteoporosis with menopause and compare the health-seeking behaviour of women related to menopause in different strata of society.

Study Design: A cross-sectional study.

Place and Duration of Study: Three different socioeconomic strata of Karachi from May till August 2004.

Methodology: A sample of 925 women, over 35 years of age, was selected from 16 clusters of 250 households (50 houses in each cluster). All apparently healthy women having age between 35 and 50 years were selected in the cluster houses. Those who were not willing to be the part of the study or giving history of taking treatment for any disease for more than 4 weeks were excluded. In-depth interviews were conducted at their houses by the fourth year medical students trained and supervised by the senior faculty of the Medical College. T-scores were calculated to get BMD (Bone Mineral Density) for all the subjects through heel ultrasound.

Results: A total of 287 women were found to be experiencing menopause. The mean age of menopause was 47.8 ± 4.7 years. Out of those 287 women, 135 (47%) wanted their menses to continue and 235 (82%) had consulted a physician after menopause. There was a significantly lower score of BMD of postmenopausal women (mean = -1.833 ± 0.65) compared to pre-menopausal women (mean = -1.597 ± 0.60, p=0.016). Out of the 925 women interviewed, 53% had consulted a physician for various symptoms related to menopause. The symptoms experienced by pre-menopausal women included lack of sleep (25%), fear of becoming sterile (13%) and urinary incontinence (18%).

Conclusion: The average age of menopause was found to be similar to other studies of the country. Lower bone mineral density was found in greater proportion among older females. Majority needed intervention inclusive of awareness through health education and medication.

Key words: Menopause. Age. Bone mineral density. Health seeking behaviour. Symptoms.
Single plasma FSH level >15 IU/L would be diagnostic of menopausal state. It may occur naturally, surgically-induced or occurs secondary to medical disorders.7,8

The symptoms experienced by menopausal women reported in literature include sleep disturbances inclusive of insomnia and quality of sleep.9 The other symptoms include urinary incontinence, hot flushes, poor memory, loss of hair and body, back or joint aches/pains.10-13

Comparative studies have depicted a lower Bone Mineral Density (BMD) in Hong Kong Chinese women than in Caucasians whereas others indicate that if weight, height and other factors are controlled, BMD and bone mass do not differ amongst Asian and White women.14,15 Amongst Indian women of a low income group, BMD and T-scores at all skeletal sites were much lower than values reported from developed countries, indicative of a high prevalence of osteopenia and osteoporosis.16 In Pakistan, very little data is available on the bone mass status of peri- and postmenopausal women and it is assumed that they are deficient considering the dietary, economic and educational status of the population at large.

The bone mineral density is measured conventionally by Dual Energy X-ray Absorptiometry (DEXA), which is a costly and highly technical procedure. Ultrasound of heel is now frequently used and moderately comparable with DEXA for assessing the BMD in community studies and first level health care facilities due to its cost-effectiveness and convenience.17 There are various measurements criteria like speed of sound and stiffness index of bone and the T-score. Latter is used to compare the patient's BMD with the mean value for individuals of the same age. A low T-score indicates etiology other than age related bone loss. According to a WHO report, the normal value for T-score is within one standard deviation of the mean value for young adults (-1 to +1). Osteopenia is present when the T-score lies between -1 and -2.5. Osteoporosis is present when T-score is less than -2.5.18,19 Using this ultrasound in Vietnam, a higher prevalence of osteoporosis was found in rural postmenopausal and urban peri-menopausal women.20 A higher level of education was associated with better BMDs and lower prevalence of osteoporosis among postmenopausal Chinese women.21 A recent Pakistani study that used this WHO criteria quoted that 35.36% of women had osteopenia, and 12.01% had osteoporosis.4

In-depth interviews were conducted at their houses by the fourth year medical students trained and supervised by the senior faculty of the college. Interview and questions consisted of their knowledge, attitude and practices related to menopause. Their health problems related to menopause were assessed through directional questions asking about relevant signs and symptoms.

BMD was measured through the use of heel ultrasound done at site and T-scores were calculated. The machine used for this study was USA made; model number 03329, Hologic Sahara, Bedford. Ethical approval was taken from the ethical committee of the college. BMD could only be measured for 925 women, out of whom 285 were postmenopausal.

SPSS 11 was used for data entry and analysis. Association of BMD to age, menopausal status and socioeconomic status was tested by using Chi-square test.

A total of 285 women, out of the total 925 women tested for BMD, belonged to the menopausal group. The mean age of menopause was 47.094±4.689 years (95% CI, 46.82–47.64). Out of the total 925 women, 300 (32.4%) had osteopenia and 62 (6.7%) had osteoporosis. A higher proportion of women in low income group had lower BMD (Table I). Thirty eight percent (38%) women over 60 years and 16% over 45 years had osteopenia. Fifty nine percent (n=541) women were experiencing symptoms related to menopause. These 541 women were asked as to how these symptoms were affecting their lives and 41.9%, (n=227) reported lack of sleep, 21.6% (n=117) had stress due to fear of becoming sterile and 30.4% (n=165) had urinary incontinence.

Out of those 541 women, 349 had discussed it with their families, 16% (n=87) had discussed it with their gynecologists, 9% (n=49) with their husbands and only 6% (n=33) with their neighbors.

This study was undertaken to obtain an average age of menopause in a random sample of women of three socioeconomic strata of Karachi and to assess the association of menopause with osteopenia and osteoporosis in 3 women, using BMD and T-scores for evaluation; to assess and compare the health seeking behaviour of women related to menopause in different strata of society.
someone, which included a close family member by 96 women, friends by 69 women and medical personnel by 184 women (Table II).

When asked about their health seeking behaviour, a majority of the women replied that one should consult a physician during pre-menopausal stage (53%), a lesser proportion believed in consulting during the menopausal stage (42%) and only 18% thought that consultation is required in postmenopausal stage. In postmenopausal stage, more women consulted a physician, even though they said that it was not required, with a significant (p<0.001) difference amongst socioeconomic groups. Only 31% of the women said that medication should be taken during menopausal time and there was a statistically significant difference amongst the three socioeconomic groups (p<0.001). Out of those 291 women, 51.5% (n=150) said use of hormones, 46.3% (n=135) said herbal drugs and 2% (n=6) named other drugs (refer to Table II).

**DISCUSSION**

The present sample of 285 menopausal women found the mean age of menopause to be 47 years, which is similar to the mean age quoted before in studies done in Pakistan. As we relied on the age, reported by the respondents, and sample comprised of urban communities, there is a chance that actual age of menopause may be higher because of the fact that Pakistani women usually under-estimate their age knowingly or unknowingly.

It was found that 32.4% women had osteopenia and 6.7% had osteoporosis, which is similar to the data reported from Pakistan. While a study done in Turkey reported 39.2% prevalence of osteopenia and 16.2% of osteoporosis. This may be due to differences in diet and physical activity practices.

Older age was associated with osteopenia and osteoporosis; it was found that 16% women over the age of 45 years had osteoporosis, which was similar to the data reported from Pakistan. While a study done in Turkey reported 39.2% prevalence of osteopenia and 16.2% of osteoporosis. This may be due to differences in diet and physical activity practices.

Experiencing any diseases related to reproductive health 79 35.7 159 32.1 40 19.1 0.000
A women should consult physician in pre-menopause 117 52.9 265 53.5 109 52.2 0.944
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A women should consult a physician in menopausal stage 91 41.2 209 42.2 89 42.6 0.951
Consulted a physician in the menopausal stage 72 32.6 174 35.2 82 39.2 0.346
A women should consult a physician in postmenopausal stage 26 11.8 85 17.2 56 26.8 0.000
Consulted a physician in the postmenopausal stage 54 24.4 130 26.3 64 30.6 0.323
A women should take some medication for menopause 84 38.0 162 32.7 45 21.5 0.001

**Table II: Relationship of socioeconomic status (SES) with health and health seeking behaviour related to menopause.**

<table>
<thead>
<tr>
<th>Questions asked from all women</th>
<th>Socioeconomic groups</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower n=221</td>
<td>Middle n=495</td>
</tr>
<tr>
<td></td>
<td>N Percentage</td>
<td>N Percentage</td>
</tr>
<tr>
<td>Experiencing symptoms</td>
<td>130 58.8</td>
<td>292 59.0</td>
</tr>
<tr>
<td>Discussed symptoms with someone</td>
<td>81 36.7</td>
<td>162 32.7</td>
</tr>
<tr>
<td>The symptoms affecting life</td>
<td>34 15.4</td>
<td>82 16.6</td>
</tr>
<tr>
<td>Experiencing any diseases related to reproductive health</td>
<td>79 35.7</td>
<td>159 32.1</td>
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</tr>
<tr>
<td>A women should take some medication for menopause</td>
<td>84 38.0</td>
<td>162 32.7</td>
</tr>
</tbody>
</table>

Percentage in each category is from the total number of women in that SES group, hence they will not add up to a 100% in rows or columns.

fear of sterility that are congruent with international and local studies.\textsuperscript{28-29}

A majority of women thought that they should consult a physician during pre-menopausal stage, nevertheless, most of them consulted a physician during post-menopausal stage, even though they said that it was not required. A one-third of them agreed that medication should be taken during menopausal time and most of them mentioned hormones. These results clearly identify that there is awareness of the body’s hormonal needs and women are concerned about their reproductive health.

There was a need to cater to the needs of these menopausal women through primary health care services and training of private practitioners in dealing with such women. Mass Media could be used to address the issue and provide information to women with lower levels of education and limited access to health care providers.

The investigators used ultrasound heel as an economical screening test for osteopenia and osteoporosis for this large sample but validity of the results would have been better with DEXA testing.

**CONCLUSION**

The average age of menopause was 47±4.7 years. Women with age above 45 years had significantly low BMD as compared to younger females.

A majority of women were aware of manifestations specific of menopause and felt that they would need to consult the physicians during that time. In majority of females the quality of life was affected as they were not taking any proper medication for their symptoms.

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**REFERENCES**


